

1126), May 30, 1923. Mr. Moxley kindly granted me permission to publish this record.

*POLYPODIUM HESPERIUM* Maxon. An unreported station for this fern is Bluff Lake, 7500 ft., San Bernardino Mts., where it grows in "north facing crevices" and was first collected by *Munz* (8162), June 1, 1924, and subsequently by *Johnston* at a slightly higher elevation, 7650 ft., July 5, 1924. Another station of this region is "two miles east of Bluff Lake at 7400 ft." (*Munz*, 10668). Unreported stations for the San Jacinto Mts. are "Long Valley, 8500 ft." *Jaeger*, June 28, 1923, and Dark Canyon, 7200 ft. (*Munz & Johnston*, 8778) where it favored the "north side of rocks." All specimens of *P. hesperium* cited are in the Pomona College Herb.

*THELYPTERIS AUGESCENS* (Link) M. & J. An unreported station of the San Gabriel Range is Van Tassel Canyon, west of Fish Canyon (*Ewan*, 1278), where a freak fertile frond was also collected (*Ewan*, 1277).

LOS ANGELES, CALIFORNIA.

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### Recent Fern Literature

Graustein, Miss Jeanette E., "Evidences of Hybridism in *Selaginella*," *Bot'l Gazette*, Vol. 90, September, 1930.

Miss Graustein has examined eight species of *Selaginella* including the two common hardy forms, *S. apoda* and *S. rupestris*. She has subjected fruiting material of these forms to cytological study and has found numerous aberrations from normal behavior. In general, such divergences in the process of spore formation and so forth are found to be characteristic of hybrids. In this connection, she reaches the conclusion that hybridism has played a considerable part in the evolution

of this group. It is a matter of interest that the common ledge species, *S. rupestris*, is "apogamous" and almost completely megasporangiate, that there is a large percentage of sterility in the spores of the species examined: that in the cultivated form, *S. Mandiana*, amitotic divisions are common.

Of less technical interest, it may be noted that "Selaginella represents a survivor of an ancient group, . . . fossil Lycopodia of the Paleozoic;" that over 600 species are now recognized.

Kümmerle, J. V. (Budapest, Hungary).

Dr. Kümmerle has sent in three short papers dealing with exotic fern types. In one the occurrence of *Azolla filiculoides* in Japan and Italy is discussed. In another, a noteworthy form of *Woodwardia radicans* is commented upon. In the third, reference is made to Dr. Kümmerle's forthcoming Catalog of *Lycopodiaceae*, *Psilotaceae*, and *Selaginellaceae*.

During the years 1920-1924 Dr. Joseph F. Rock made a large collection of ferns in China, chiefly in the southwestern portions. Dr. Christensen has been working since 1926 at their determination. He has encountered considerable difficulty in making out identities; his list, now published, is not only a model of its kind in other ways, but of especial value in that it straightens out many of the tangles caused by the work of Baker and Christ. These men, noted fern specialists in their day, received many Chinese ferns for study. In at least one case, the classical collection of Dr. August Henry, sets were sent to both and each worked at them quite independently of the other. The result was that the same species was often described under different names by both, that each misunderstood the other's descriptions

(sometimes quite excusably) and, much less inevitably, each described over again species of his own about which he had forgotten. By a systematic study of type specimens Dr. Christensen has been able to put in their proper places these confused and confusing names, so far as they relate to the Rock collections, and his accompanying comment is of high value.

To any young taxonomist beginning the study of ferns, Dr. Christensen's statement of his point of view and methods on pages 266 and 267 is likewise most heartily commended.<sup>1</sup>

THE OLDEST LIVING FERN.—One modern fern species is reported as identical with a form existing millions of years ago in Eocene time, namely, *Onoclea sensibilis*. The fossil form was described by Newberry as *O. sensibilis fossilis*. It is referred to in a recent book by Dr. F. H. Knowlton of the U. S. Geological Survey ("Plants of the Past"), Fig. 85 in that text shows a fragment of a leaf with the lobing and venation clearly evident. It would be strange if the form of several million years earlier was identically the same as our modern species, but paleontologists who have studied it have not found evidence as yet justifying separation as a distinct species. It is further noteworthy as the only modern fern species known also as fossil.

ASPLENIUM BRADLEYI ERRONEOUSLY REPORTED ON LIMESTONE AGAIN.—In carrying out studies on the soil reaction preferences of ferns, I have repeatedly tested the soils supporting Bradley's Spleenwort, and have in-

<sup>1</sup> Christensen, C. Asiatic Pteridophyta collected by Joseph F. Rock, 1920-1924. Cont. U. S. Nat. Herb. 26: 265-337, pl. 13-29. 1931.